Electronic Version
Stylesheet Version v1.1.1

Claims

[c1] What is claimed is:

1.Anantenna, comprising:

a dielectric layer having a first surface and a second surface which is spaced apart from and is substantially parallel to the first surface;

a ground layer of electrically conductive material covering a portion of the first surface of the dielectric layer;

a feed-line of electrically conductive material disposed on the second surface of the dielectric layer;

a first radiating element of electrically conductive material disposed on the dielectric layer and electrically connected to the feed-line, wherein the first radiating element is for generating a first operating frequency of the antenna; and

a second radiating element of electrically conductive material disposed on the dielectric layer in close proximity to the first radiating element such that an electromagnetic energy can be transformed from the first radiating element to the second radiating element through energy coupling, wherein the second radiating element is for generating a second operating frequency of the antenna.

[c2] 2.The antenna of claim 1 wherein the first and second radiating elements are both disposed on a same surface of the circuit board.

[c3] 3.The antenna of claim 1 wherein the first and second radiating elements are disposed on different surfaces of the circuit board.

[c4] 4.The antenna of claim 3 wherein the first radiating element is disposed on the second surface of the circuit board, and the second radiating element is disposed on the first surface of the circuit board.

[c5] 5.The antenna of claim 4 wherein at least a portion of the first radiating element disposed on the second surface of the printed circuit board is in close proximity to at least a portion of the second radiating element disposed on the first surface of the printed circuit board.

[c6] 6.The antenna of claim 1 wherein the first radiating element is a monopole antenna.

[c7] 7.The antenna of claim 1 wherein the second radiating element is a half-wavelength resonator.

[c8] 8.An antenna, comprising:
a first radiating element of electrically conductive material disposed on a circuit board and electrically coupled

to a feed-line, wherein the first radiating element is for generating a first operating frequency of the antenna; and

a second radiating element of electrically conductive material disposed on the circuit board in close proximity to the first radiating element such that an electromagnetic energy can be transformed from the first radiating element to the second radiating element through energy coupling, wherein the second radiating element is for generating a second operating frequency of the antenna.

[c9] 9.The antenna of claim 8 wherein the printed circuit board is composed of dielectric material and has a first surface and a second surface which is spaced apart from and is substantially parallel to the first surface.

[c10] 10.The antenna of claim 9 wherein the first and second radiating elements are both disposed on a same surface of the circuit board.

[c11] 11.The antenna of claim 9 wherein the first and second radiating elements are disposed on different surfaces of the circuit board.

[c12] 12.The antenna of claim 9 wherein at least a portion of the first radiating element disposed on the second surface of the printed circuit board is in close proximity to

at least a portion of the second radiating element disposed on the first surface of the printed circuit board.

[c13] 13.The antenna of claim 8 wherein the first radiating element is a monopole antenna.

[c14] 14.The antenna of claim 8 wherein the second radiating element is a half-wavelength resonator.